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FLOORS AND FLOOR COVERINGS

A FLOOR, being a permanent part of the house, should be of durable materials, well laid, and suited to the purposes for which the particular room is used. Moreover, well-chosen materials, proper finishes, and good methods of cleaning make a great difference in the cost, time, and labor required to keep a house in order. This bulletin gives information regarding the character and qualities of different sorts of floors and floor coverings with reference to their suitability, durability, economy, and care.

Contribution from the States Relations Service
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FLOORS AND FLOOR COVERINGS.

PREPARED IN THE OFFICE OF HOME ECONOMICS.

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FLOORS AND FLOOR COVERINGS are often a perplexing problem, especially in these days when everything connected with the building, furnishing, and upkeep of a house is high in price. Fifty years ago little attention was given to the floors themselves beyond having them level, fairly tight, and of sound lumber, for they were usually covered entirely with carpet or matting in the living rooms, and left bare and unfinished or at most painted in the kitchens and pantries.

Practices, however, have changed; to-day, smoothly finished floors and removable rugs are the pride of many housewives. In fact, the housekeeper finds herself almost bewildered by the variety of finishes and materials on the market. Moreover, the increased cost of materials and the high value placed on labor makes her doubly eager to spend her money wisely and to choose what will wear well and can be kept in order with the least effort. Saving needless labor is just as true economy as careful spending of money. Fortunately, there are sound principles to guide her choice, though they must be modified somewhat to meet each case.

As a general rule, it is most satisfactory to make the floor—which in this sense includes rugs or any other coverings—neutral in color,

inconspicuous in design, and darker than the surrounding walls. Nor is the reason for this hard to find. The floor is the foundation and in many cases part of the background of the room and its furnishings. Despite this fact, interest in the smoothness of a finish or the sheen of a particular rug sometimes leads to a choice of colors and designs that make the floor the most conspicuous part of the room and even give it an upside-down effect.

Color is to many persons the most interesting subject of all in choosing such furnishings as floor coverings. Talk of color schemes is heard at every turn, but not all realize how many-sided is this question of color and color harmony. Too often because blue or green or rose is her favorite color the housekeeper buys that kind of rug, not stopping to think how wear will affect it, how it will look with the room as a whole, or whether the room is too dark or too light for such a color. For instance, the soft blue rug of Chinese design may show to perfection in the strong light of the shop window and may be a beautiful thing in itself, but whether the room is sunny enough, whether the floor is stained the right color, and how it will harmonize with the furniture and hangings are questions the purchaser should ask herself before making her decision.

To put it briefly, then, the rug or covering should harmonize in color with the parts of the floor that show, and both these in turn with the walls, the furniture, and the curtains. Of course, this does not mean that all these must be shades of one color, for such an arrangement would soon become monotonous, but simply that they should be colors that look well together and are so used that the floor is darkest, the walls lighter, and the ceiling lightest of all.

At the time the housekeeper is deciding on color and design she must also be gathering information about wearing quality and cost. A floor is made to be walked on, and no matter how attractive the finish or excellent the color and design of a material it can not be considered satisfactory if it does not wear well and is not easy to clean.

FLOORS.

Floors need to be strong, comfortable to walk and stand on, and easy to care for, as well as attractive in appearance.

A floor should be firm enough to bear without yielding the strain that it receives; if it is not, other parts of the structure will be strained unduly and in extreme cases may even be thrown out of plumb. Extra support is sometimes necessary underneath a floor, especially an old or badly built one, over which there is constant heavy passing or on which is kept a heavy object such as a safe or a cabinet.

A floor should be level. Uneven floors are uncomfortable to walk and stand on, do not allow the furniture to rest firmly and squarely, and bring harder wear on some parts of the floor covering. Padding underneath the floor covering will make these defects less noticeable, but is at best only a makeshift.

A floor should be tight, without open spaces between the boards or around the edges, because cracks let in dirt, drafts, and vermin, and are hard to keep clean.

The appearance of the floor has much to do with the general attractiveness of a room. In color and in finish the floor should harmonize with the other features of the room.

The qualities in a floor that make for comfort and ease of care vary with the use. For example, the kind of floor desirable in the living room may be unsuitable in the kitchen, where the wear is heavier and more cleaning is necessary. With this question of care is coupled that of cost, which includes not only the original outlay for the floor itself but also the expense of upkeep and of providing and caring for whatever coverings are used. The labor of routine cleaning is a part of the cost of the upkeep, though done by a member of the family who receives no pay for the work. A rather large investment in floors may in many cases be justified, for good floors add to the market value as well as to the comfort and attractiveness of a house.

WOODS SUITABLE FOR FLOORING.

In this country wood has been by far the most popular material for floors in private houses, and has been used in forms varying from the rough-hewn puncheons of pioneer days to the small, carefully fitted strips in parquetry. The floor of well-matched boards of good wood is generally considered standard for household use to-day, though special materials, such as concrete, tile, and composition, are sometimes preferred for floors in kitchens, bathrooms, basements, entries, and porches.

In laying new wooden floors questions arise as to relative merits and costs of various woods and how they shall be treated, whether merely planed smooth and left unfinished, or what kind of finish shall be used. Woods for flooring are commonly classified as hardwoods and softwoods. These are trade terms and may be misleading, for some of the so-called softwoods are harder than some of those classed as hardwoods.

In general, the hardwoods make better floors than the softwoods. They wear more evenly, are less likely to sliver, take a more durable finish, and are more attractive in appearance. They are usually more expensive than softwoods, but this is somewhat offset by their good

wearing qualities. Of the hardwoods, oak and maple are the most used, and birch, beech, and others to a limited extent.

The so-called softwoods include the various kinds of conifers. Of these, long-leaf pine and Douglas fir, or red spruce, as it is sometimes called, are perhaps the most durable for floors.

Whatever kind of wood is chosen, certain general points should be considered. The way in which flooring is sawed has much to do with the beauty of the grain and the durability of the surface. In general, quarter-sawed flooring is best. The boards are less likely to shrink and swell, the surface is more durable than in plain-sawed lumber, and in oak especially the grain is shown to the best advantage. All flooring should be properly dried so that it will not be seriously affected by heat and moisture after it is laid. The thickness and the width of flooring vary; $\frac{7}{8}$ inch thick by $2\frac{1}{4}$ inches wide is a good size to use.

Both hardwood and softwood floors may be used either with or without finish and with or without covering. Hardwoods are usually finished and partly covered with rugs or left bare, and softwoods are generally used for floors that are to be covered entirely. Some of the more durable softwoods may, however, be successfully finished and used either with or without rugs.

The finished floor with removable coverings has much to recommend it; it is easily cleaned, sanitary, and simplifies many problems in house furnishing. Leaving wooden floors both unfinished and uncovered is not considered satisfactory, except occasionally in kitchen or bathroom. Even in these cases finishing or covering the floor with some washable material would probably be economy, because it would be easier to clean.

FINISHING NEW WOOD FLOORS.

New wood floors may be finished in a variety of ways, depending partly on the kind of wood and partly on individual preference. Wood finishers themselves often disagree about the best method of treating floors, but all agree that it is economy to use the best materials. The present tendency, for hardwood floors particularly, is to keep the natural color of the wood and at the same time give it a smooth, durable finish that can be cleaned and renewed with the minimum of effort. Though darker-colored floors generally give the best effects, light-colored floors have the advantage of showing dust and footprints less readily.

Stain, filler, oil, paint, varnish, shellac, and wax, or a combination of two or more of these materials, may be used. Oak and maple floors, for example, are often finished with a colorless filler, white shellac, and light-colored wax or pale varnish, a treatment that pre-

serves the natural color of the wood with little change. A somewhat golden tone can be obtained by using orange shellac or dark varnish.

Before any finish is applied, the floor should be made smooth by planing and sandpapering parallel with the grain of the wood, and then swept and dusted with a soft cloth. If the sandpaper is fastened on the bottom of a heavy block of wood to which a handle is attached, or better still, on the bottom of a weighted polishing brush, this work will be easier.

TOOLS NEEDED IN FINISHING FLOORS.

Good tools are essential. Brushes for applying stain, varnish, paint, and oil are manufactured in various sizes and qualities. In general, a wide brush of good quality will be found most convenient and economical, and if properly cared for can be used over and over again.

A varnish brush may be kept in the varnish in which it is used or in case of shellac varnish in alcohol; but brushes used in oil paint and oil stain, unless they are to be used again within a few days, should be thoroughly washed in turpentine or kerosene, rinsed in gasolene or benzine, washed again in warm soapsuds, thoroughly shaken, and hung up to dry with the bristles down. Paintbrushes that are to be used again the next day may simply be wrapped in several thicknesses of paper, or they may be kept for several days with the bristles submerged in turpentine or kerosene. If kerosene is used, the brush must be shaken and rinsed in turpentine before it is put into paint again. Brushes used in water stain may be washed and rinsed in clear water.

For polishing a waxed floor, a long-handled weighted brush is the most convenient tool. For best results it must be clean, and under no circumstances should it be allowed to come in contact with oil. A slip-on cloth cover will be found convenient to protect it when not in use. Occasionally the brush should be soaked and washed thoroughly in lukewarm water to which a little household ammonia has been added (about 3 teaspoons to a quart of water), rinsed in clear water, turned on its side, and dried in a current of air, but not near a hot stove or radiator.

Clean cotton and woolen cloths or pieces of woolen carpet are also needed in finishing and polishing floors. The woolen cloths are in many cases too valuable to throw away when they become soiled and may be cleaned in the following way. Soak them for about one hour in hot water containing about 3 tablespoons of washing soda to the gallon, stir and work them occasionally with a stick, wash clean in hot soapsuds, and rinse in hot water to which has been added a little kerosene or floor oil. When not in use, cloths saturated in oil or

wax should be kept in a tightly covered earthenware or metal container, which not only prevents them from becoming stiff but reduces to a minimum the danger from spontaneous combustion.

STAINING.

Stains are used on floors to bring out the grain of the wood, or to make them harmonize in color with other woodwork or with furnishings, or to give certain softwoods tones similar to hardwoods.

Oil and water stains, so called because of the solvent used, are the common kinds. Oil stains are easy to apply evenly and do not raise the grain of the wood, but they do not penetrate very deeply and are likely to give a muddy effect. Water stains, on the other hand, soak in readily, give a clear color, and are cheaper than oil stains, but raise the grain of the wood so that sandpapering a second time may be necessary. Water stains may be used on either hardwoods or softwoods, but as a rule oil stains are not so successful on hardwoods.

Both water and oil stains may be bought ready mixed, or some of the simple ones can be made at home. In any case, before using, the stain should be tested on an inconspicuous part of the floor or on a sample of the same kind of wood. If the color is too intense, the stain should be diluted with the kind of solvent with which it is mixed or other suitable liquid. For example, an oil stain may be diluted with turpentine, and a water stain with water.

The following formulas have been tested by the Bureau of Chemistry of this department:

HOMEMADE FLOOR STAIN NO. 1.

1 ounce permanganate of potash. | 1 quart warm water.

The solution made by dissolving the permanganate of potash in the water is violet colored, but when it is applied to wood a chemical action results and the wood is stained brown. This stain gives better results on pine than on oak flooring.

HOMEMADE FLOOR STAIN NO. 2.

1¼ ounces pulverized gilsonite. | 1 quart turpentine.

This is a brown stain that can be used on either softwoods or hardwoods.

HOMEMADE FLOOR STAIN NO. 3.

½ pound raw sienna (ground in oil).
2 ounces raw umber (ground in oil).
1 pint boiled linseed oil.
½ pint ground japan drier.
1 pint turpentine.

Putting these materials into a bottle and shaking vigorously is perhaps the best way of mixing this stain. It has been found to give excellent results on oak.

A strong decoction of walnut or butternut hulls may be used as a brown stain on woods containing tannin, such as oak or chestnut, and repeated applications of ammonia water will also darken these woods.

If an oak floor is to be water-stained, coating it first with clear water and sandpapering it smooth after it is dry will lessen the tendency of the stain to raise the grain of the wood. Oil stains will be absorbed more evenly by pine or maple floors if the wood is first coated with a mixture of 3 parts turpentine and 1 part linseed oil and the surface sandpapered smooth after it is dry.

Stains should be applied rather thinly with a clean brush or a sponge with even strokes taken parallel with the grain of the wood. With water stains especially, care should be taken not to let the strokes overlap, and the stained surface should be wiped at once with a soft cloth or cotton waste. Oil stains should be allowed to set for a few minutes before the surface is wiped. Two coats of light stain generally give a better effect than one coat of heavy stain. In general, 1 gallon of oil stain will coat about 400 square feet of floor once, depending, of course, on the depth of color desired and the texture of the wood.

After a floor is stained, it should be allowed to dry for at least 24 hours, and dust kept from it as much as possible. When thoroughly dry, it should be polished with a weighted brush covered with carpet, after which it is ready for the filler and wax or varnish.

Some of the very porous woods may be filled and stained at the same time by combining the stain and the filler, but generally a better effect is obtained by applying them separately.

FILLING.

Porous woods, such as oak and ash, take a smoother and more durable finish if a good paste filler is rubbed into them before the varnish, wax, or shellac is applied. Maple, pine, and other nonporous woods do not need such treatment and in fact will not absorb some kinds of fillers.

The best paste fillers are made of silex (silica), linseed oil, turpentine, japan, and coloring matter to match the wood. Cornstarch and whiting are also used as the base of paste fillers, but are less transparent than silex and can not be worked into the pores of the wood so thoroughly. They are generally used in homemade fillers, however, for silex is difficult to obtain in the retail trade. Oil has a tendency to darken wood, so it is sometimes omitted from the filler if a very light finish is desired.

A filler should be about the consistency of varnish when applied. If too thick, it can be thinned with turpentine for use on natural-

colored woods, or with boiled linseed oil on stained woods. After the floor has been dusted, the filler is generously applied lengthwise of the grain with a clean stiff brush. This coating is allowed to set for 15 or 20 minutes, or until it turns gray, and is then rubbed in with cotton waste or burlap crosswise, not lengthwise, of the grain. A coarser material will drag the filler out of the pores instead of forcing it in. Several days later the floor is rubbed smooth with No. 0 sandpaper slightly dampened on the back. Ordinary oak will take up about 5 pounds of filler to 250 square feet of floor. If a very high polish is desired, a second coat of filler containing less oil and more turpentine may be applied and rubbed down as in the first case.

Liquid fillers are sometimes used on close-grained woods to fill up the pores and prevent the absorption of the more expensive varnish. A pure shellac varnish made by dissolving gum shellac in alcohol is recommended by some authorities for this purpose. The ready-mixed liquid fillers, which are brushed on and permitted to remain on the surface without being rubbed off, are in many cases little better than cheap varnishes.

VARNISHING.

Varnish gives floors a hard, smooth, glossy finish, and is easy to apply and to clean. Under hard usage, however, it is likely to wear off, leaving patches of bare wood that remain unsightly even after revarnishing. Successive coats tend to darken the floor. Varnish is a common finish for softwood floors, but wax is preferred by many for hardwood.

Manufacturers have tested and put on the market an assortment of varnishes adapted to special uses, and it is often better to buy one of these ready-made standard floor varnishes than to attempt to mix one at home.

Varnishes are roughly classified into two groups, spirit and oil. The spirit varnishes are made by dissolving a resinous substance, such as gum shellac, in alcohol or some other volatile liquid. They dry quickly, leaving a hard, brittle coating on the wood, and, with the exception of shellac varnish, are not commonly used on floors.

SHELLAC VARNISH.

2 pounds gum shellac. ½ pound castor oil.	1 gallon alcohol, denatured according to United States Internal Revenue formula No. 1.

Put these ingredients into a well-stoppered bottle in a warm place, and shake the mixture frequently until the shellac is dissolved. The alcohol should contain not more than 5 per cent of water, and care should be taken not to drop any water into it as it is being mixed with the dry shellac. The castor

oil aids in making the varnish flexible and less brittle when dry, but may be omitted; in that case, the quantity of gum shellac should be increased to 2½ pounds. If too thick, this varnish may be thinned by the addition of more alcohol.

Successive coats of shellac varnish well rubbed down may be used alone on a floor, or one coat may be used as a surfacer on a paste-filled hardwood floor that is to be waxed. For the first coat, 1 gallon of shellac will cover 300 to 400 square feet of floor, and additional coats will of course require less. Parquetry floors are generally shellacked in order to preserve the light color of the wood.

The oil varnishes contain resinous gum, oil, and driers, carefully heated and blended so as to bring out certain properties. Most of the floor varnishes are of this type and of the kind known in trade as "medium oil." They dry more slowly than the spirit varnishes, but have luster, hardness, and greater durability. Spar varnishes belong to the kind known as "long-oil" and contain an even larger proportion of oil, which makes them more durable and impervious to water. They are sometimes used on kitchen and bathroom floors, where those characteristics are of particular importance.

The first rule of varnishing is to have the surface of the wood and the air in the room as free from dust as possible and to use only scrupulously clean brushes. Varnish brushes are chisel shaped or slightly tapering; a rather wide one will be most convenient for this work. The varnish should be brushed on lengthwise of the grain in a smooth, thin coat without laps or brush marks and allowed to dry for at least two days. If possible, the temperature of the room should be 70° F. or higher and the varnish should be applied in the morning, for it dries better during daylight. When the first coat is thoroughly dry another coat or perhaps several more coats should be applied in the same way as the first. The more coats of varnish put on a floor, the more durable the finish. One gallon of floor varnish is enough for two coats on about 300 square feet of oak floor or about 200 square feet of pine.

WAXING.

Waxing is considered by many the most attractive and practicable finish for hardwood floors. It preserves the natural color of the wood, brings out the beauty of the grain, and is easily revived and renewed. Given the proper care, waxed floors improve with age, even under hard usage. In some of the European palaces, for instance, floors that have been polished for centuries with nothing but wax are still bright and beautiful in color though now worn thin by use. The chief objections to waxed floors are the amount of labor required to polish them and the fact that water turns the finish white. These water spots, however, may be quickly removed by rubbing on a little wax with a woolen cloth or a weighted brush.

Wax of various kinds dissolved in turpentine is the basis of all floor waxes. Beeswax, carnauba, ceresin, or paraffin, or a combination of these may be used, and gasoline, ammonia, or some other volatile solvent is often used in addition to the turpentine.

Floor wax may be bought ready mixed or made at home. The first of the following formulas has been worked out by the United States Bureau of Standards[1]; the second by Dr. A. T. Kerr, of Cornell University.

HOMEMADE FLOOR WAX NO. 1.

1 pint turpentine.
4 ounces beeswax.
3 ounces aqua ammonia (strength, 10 per cent).
1 pint water.

Mix the beeswax and the turpentine and heat them by placing the vessel in hot water until the wax dissolves. Remove the mixture from the source of heat, add the ammonia and the water, and stir vigorously until the mass becomes creamy.

On varnished or shellacked floors this wax should be applied lightly and any excess wiped off at once, because ammonia dissolves varnish and shellac. Unfinished oak flooring polished with this wax will be darkened somewhat as a result of the chemical action of the ammonia.

HOMEMADE FLOOR WAX NO. 2.

¼ pound beeswax.
1 pound paraffin.
¼ pint raw linseed oil.
1¼ pints turpentine.

Melt the beeswax and the paraffin, add the linseed oil and turpentine, and stir the mixture vigorously. Unfinished wood will be darkened somewhat by this wax as a result of the absorption of the linseed oil.

Turpentine is highly inflammable; therefore care must be taken in making these waxes to heat the ingredients only by setting them in hot water and to have no flames in the room.

Wax may be applied to a floor that has been stained, painted, or varnished, or directly on the bare wood. Hardwood floors are generally paste filled and in many cases surfaced with shellac varnish before being waxed. The paste fills up the pores, and the shellac varnish makes a hard foundation for the wax and prevents grease from penetrating and staining the wood. A waxed floor will be less slippery, however, if the shellac is omitted or if only a very thin coat is applied and well sandpapered.

Success in waxing floors lies in applying the wax in thin coats and rubbing it a great deal. One pound will coat about 250 square feet of floor. After the preliminary coats of filler or varnish are thoroughly dry, the wax should be rubbed on with a woolen cloth, a piece of old carpet, or a brush, and allowed to harden overnight. The next morning the floor should be polished lengthwise of the grain with a weighted brush or a heavy block wrapped in woolen

[1] U. S. Dept. Commerce, Bureau of Standards, Circular 70, Materials for the Household.

cloth, burlap, or old carpet. Then one or perhaps two more coats of wax should be applied and rubbed down in the same way as the first.

OILING.

Oiling is a rather common and economical way of finishing kitchen, pantry, bathroom, and porch floors and is by many considered more satisfactory for pine floors than varnishing. Oil is easy to apply, gives a finish that is durable and not slippery, and penetrates the pores of the wood so that it is proof against grease and water spots. Oiled floors, however, darken with use and in time become dingy because dust clings to them and unites with the oil on the surface.

Boiled linseed oil is the kind most commonly used and may be applied clear, either hot or cold, or combined with turpentine, which makes it penetrate the wood better and leave a thinner film on the surface. A mixture of equal parts of oil and turpentine is recommended for pine floors.

If desired, a floor may be stained before it is oiled, but in any case it should be clean, dry, and free from dust when the oil is applied. The oil should be brushed on lengthwise of the grain of the wood, rubbed in with a soft oily cloth, and any excess wiped off with a dry cloth. After the oil has dried for a few hours, the floor may be polished with a weighted brush covered with a clean woolen cloth or piece of carpet. Most floors will absorb two coats of oil.

PAINTING.

Paint is very commonly used on softwood floors, but is not a very durable finish, and worn places can seldom be satisfactorily patched. Painted floors are, however, easy to clean, for the paint forms a coat impervious to water and grease, and they can be made to match or harmonize with woodwork or furnishings.

Paints, like varnishes, vary in durability according to the materials in them. Special floor paints of good quality are on the market, or they may be mixed at home. If only one or two floors are to be painted, one of the ready-mixed kinds will be found more economical and convenient, and 1 gallon will generally be enough for three coats on about 200 to 300 square feet of floor. White lead, zinc white, linseed oil, drier, and coloring matter are the chief ingredients in a good floor paint.

A kitchen floor should have three coats of paint, and the wood should be clean, dry, and free from dust before the paint is applied. According to the United States Bureau of Standards,[2] the first coat should consist of white lead in linseed oil, with a little drier; the second coat, of equal parts of white lead and zinc white in oil, color-

[2] U. S. Dept. Commerce, Bureau of Standards, Circular 69, Paint and Varnish.

ing matter as desired, and drier and turpentine to give a flat finish; and the third coat, of the same materials as the second, except that instead of turpentine good floor varnish should be added in the proportion of 1 to 4 pints to a gallon of paint. Each coat of paint should be thoroughly brushed into the wood, lengthwise of the grain, and allowed ample time to dry. If desired, a coating of equal parts turpentine and linseed oil may be rubbed on with a soft cloth after the last coat of paint has dried thoroughly, and the floor then polished with a woolen cloth. This gives a soft lustrous finish and makes the paint wear longer.

STONE, CONCRETE, COMPOSITION, AND TILE FLOORS.

Stone and marble floors have been in use since olden times and are desirable for certain purposes, especially in public buildings.

Concrete, composition, and tile are in some cases used as flooring in all the rooms of a house, but more commonly only where the floors receive the hardest wear, such as in entry, kitchen, bathroom, laundry, and cellar. These materials are now manufactured in a variety of soft, pleasing colors, and when properly laid make very attractive floors that are in addition durable, sanitary, and easily cleaned. They have the disadvantage of being so hard that walking or standing on them for any length of time is fatiguing, though this may be overcome somewhat by using rugs and rubber and cork mats.

Cement floors may be painted, thus making them smoother and more impervious to moisture. For some time after it is laid, cement contains lime in a form injurious to ordinary paint; therefore the surface should be thoroughly washed with a solution of 3 to 4 pounds of zinc sulphate to 1 gallon of water to render the lime insoluble before paint is applied. Specially prepared paints for use on cement are now on the market, or the paint may be prepared at home in the same way as for a wooden floor (p. 13) except that a larger proportion of varnish is used in the last coat.

TREATING OLD WOOD FLOORS.

How to finish old wood floors or to restore the color and luster to those that have become dingy and worn is a problem that often perplexes the housewife. With the discarding of heavy carpets fastened in place has come the problem of finishing the floor underneath so that rugs can be used. Floors that have been covered with carpet are in most cases of softwood and have had no finish of any kind applied to them.

First of all, the floor is made as tight, level, and smooth as possible. It may need to be planed or sandpapered. All remnants of tacks are drawn or driven below the surface with a nail set. The wood is

then scrubbed clean with hot soapsuds or some other cleansing agent and rinsed with clear water. Stains may in many cases be bleached out with a solution made by dissolving 1 teaspoon of oxalic acid in 1 cup of hot water. This liquid, which is poisonous and must be carefully handled, is spread on the wood and allowed to stand overnight. All traces of both cleansing agent and acid must be removed, otherwise they will injure the finish later. The floor when thoroughly dry may be stained, varnished, oiled, or painted as though it were new. After the first coat of finish has been applied and allowed to dry, cracks and holes should be filled with crack filler colored to match the floor.

Various kinds of crack fillers are used, but a simple and satisfactory one may be made of genuine whiting and linseed-oil putty into which is thoroughly worked about 10 per cent of dry white lead and coloring matter to match the floor. Another good filler may be made of cabinet glue melted with a little water in a double boiler, thickened with fine sawdust, and colored to match the wood. This must be used while hot and can be worked smoothly into cracks with a small knife.

A slightly worn varnished floor can generally be satisfactorily renovated by rubbing the scratches with a soft cloth dampened with linseed oil or if necessary sandpapering them out, and brushing on a fresh coat of varnish. If a varnished floor is badly worn, the best way is to remove all the old finish possible and start anew.

Varnish or paint can be removed from a floor by scraping and planing, or by applying a chemical varnish remover. The first method, although tedious and laborious, especially for an inexperienced worker, is better, and is the only one that will give good results if the floor has been stained. In many cases it pays to have floors scraped by an expert, who has the proper tools and knows just how to treat different woods. After a floor has been scraped, planed, and sandpapered, it can be finished as though it were new.

Removing varnish or paint from floors with chemicals is also hard work and must be done carefully so as not to spoil the finish on baseboards and moldings. Commercial varnish and paint removers may be bought but are rather expensive, and satisfactory removers may be mixed at home. The following mixture dissolves varnish quickly without darkening the wood or raising the grain:

VARNISH REMOVER.

4 parts benzol.	1 part carbon tetrachloride or chloroform.
3 parts amyl acetate or fusel oil.	

After this mixture has been applied to the wood and allowed to stand for a few minutes, the old varnish may be scraped or rubbed off with a dull knife, steel wool, or excelsior. This varnish remover and others of this type should

be used only where there is good ventilation and no open flame of any kind, for they contain anæsthetic and inflammable materials.

Caustic soda or household lye solutions are also used in removing paint or varnish, but they darken oak flooring, so that treatments with acids and alkali are necessary to bring back the natural light color of the wood, and they are such strong reagents that the hands and clothing must be carefully protected.

The caustic soda or lye may be dissolved in hot water, but gives better results if mixed with hot boiled starch solution, such as is used in starching clothes. About 3 tablespoons of the soda should be used to 1 quart of the starch solution. This should be applied to the floor with a cotton swab or a vegetable fiber (not bristle) brush. A long-handled scrubbing brush makes the work much easier. After a few minutes the softened varnish may be scraped or rubbed off. The floor should then be washed several times with clear water, allowed to dry thoroughly, sandpapered smooth, and carefuly dusted before it is refinished.

If shellac varnish alone has been used on a floor, it can be removed by flooding a small area at a time with denatured alcohol and after a few minutes scouring with steel wool.

A soiled waxed floor can be more easily renovated. If it is not in bad condition, rubbing with a cloth saturated with turpentine or gasoline will brighten it so that a fresh coat of wax may be applied. If necessary, however, the old coating of wax and dirt may be entirely removed by rubbing first with No. 1 steel wool dipped in turpentine and then with a soft cloth, after which the floor may be refinished with varnish or wax.

An oiled floor that has become dark and grimy with use may be renovated by applying a coat of varnish remover as already described, and then bleaching it with a strong solution of oxalic acid. So far as possible all traces of these materials should be removed before a new finish is applied.

Fresh coats of paint may be applied to a worn painted floor or the paint may be removed in the same way as varnish, and the wood finished in some other way if desired.

CARE OF FLOORS.

Finished floors can be kept in good condition with a comparatively small outlay of time and strength, but the method must be adapted to the kind of finish. Only too often an expensive and carefully applied finish is spoiled by neglect or lack of knowledge of the best methods and materials to use in cleaning.

Durable tools kept in good order are needed for this work, and suggestions for the selection and arrangement of them in a cleaning

closet are given in another publication of this department.[3] The oily cloths used in cleaning floors are a serious fire hazard, and should be kept, when not in use, in a closed metal or earthenware container.

The parts of a floor that receive hardest wear, near doors, for instance, or in halls, can be protected by small rugs, and coconut fiber or other mats placed at all entrances to the house will reduce the mud and dirt which are carried in on shoes and which help to wear down all floor finishes.

Unfinished wood floors should be mopped or scrubbed with warm water and mild soap, scoured if necessary with powdered pumice, clean beach sand, or fine steel wool, rinsed with clear water, and wiped as dry as possible. Strong soaps, alkalis, and too free use of water darken wood and may in time soften it. Ink or iron stains may be bleached out with an oxalic-acid solution (p. 15).

Varnished floors should be swept with a soft brush, a mop, or a broom covered with a cotton-flannel bag, and then rubbed with a cloth or mop slightly moistened with floor oil or kerosene. The oil gradually dries out of varnish after it has been applied to wood, and unless restored by an occasional rubbing with an oiled cloth the varnish becomes exceedingly hard and brittle. Only enough oil to moisten the cloth or mop should be used, however, for if any remains on the surface it catches dust and darkens the wood. Good floor oils can easily be mixed at home. One part boiled linseed oil thinned with three parts turpentine makes an excellent floor oil, while one part light motor or engine oil combined with four parts kerosene gives results similar to those from commercial kinds. The light motor oil recommended must not be confused with the heavy, less highly refined kinds that contain dark sediment.

In general, varnished floors retain their color and luster better if no water is used on them, but if very dirty they may be wiped with a cloth or mop wrung out of warm soapy water wiped dry at once, and polished with an oiled cloth or mop. White spots made by water and light scratches can generally be removed by rubbing with a cloth moistened with floor oil, kerosene, or furniture polish. As soon as a varnished floor can be no longer revived by this method, a fresh coat of varnish should be brushed on, for if the finish wears down to the bare wood it can seldom be patched successfully.

Waxed floors should be swept with a soft brush or mop entirely free from oil. Oil softens wax and should never be used on it in any way. About once a week a waxed floor should be given a more thorough cleaning with a cloth wrung out of warm soapy water, or, better still, moistened with turpentine or gasoline. Water dulls and whitens a waxed floor and though the color and luster may be

[3] Farmers' Bul. 1180, Housecleaning Made Easier.

restored by polishing, labor may be saved by using turpentine or gasoline, for they dissolve the film of dirty wax on the surface and leave it bright. Both these liquids, however, are very inflammable and are not to be used in a room where there is an open flame of any kind; also, they should be kept in a tightly corked bottle from which a little is poured onto the cloth as needed. Parts of the floor that have the hardest wear should be refinished with a thin coating of wax and then polished; or occasionally after cleaning, the entire floor may be given a very thin coat of wax and polished with a weighted brush or woolen cloth.

Under moderate use, however, a floor needs rewaxing only two or three times a year. Applying too much wax is a common mistake; the surplus simply lies on the surface in a soft coat that collects dust and is easily marred. Ink or iron rust stains may be removed with oxalic-acid solution in the same way as from an unfinished wood floor (p. 15), and after all traces of the acid have been removed and the spot dried it can be rewaxed and polished. White spots made by water will generally disappear if rubbed with a woolen cloth or weighted brush; if necessary, a little wax may be applied.

Oiled floors should be swept with a soft brush and dusted with an oiled cloth or mop. Occasionally, they need a more thorough cleaning with a cloth wrung out of warm, soapy water, followed by polishing with a cloth moistened with kerosene or a good floor oil. Water and soap should be used very sparingly on oiled floors.

Painted floors also should be swept with a soft brush and dusted with a dry or oiled mop. About once a week, or more often if necessary, they need to be wiped or mopped with a wet cloth, and rubbed with an oiled cloth or mop. Scrubbing with strong soap or other alkali will soon ruin a painted floor, and allowing water to remain on it is also injurious.

Cement floors should be swept with a broom and occasionally mopped, scrubbed, or flushed with water. They are usually equipped with a drain to carry off the excess. Composition and tiled floors should be swept with a soft brush and dusted with a dry mop. When necessary, they may be washed with a cloth wrung out of warm, soapy water and wiped dry as soon as possible. If water is left standing on a composition floor it may destroy the smooth surface, and in the case of a tiled floor is likely to loosen the cement that holds the tiles in place.

FLOOR COVERINGS.

Floor coverings when well chosen and properly laid are one of the most attractive and useful features of the furnishings of a home. They make floors warmer and more comfortable to walk on, protect them from hard wear, deaden sound, and may cover rough, unsightly

places, and make part of the general scheme of decoration. To buy wisely as well as to to obtain the best service from what she already has, the housekeeper needs to know what are the various kinds of floor coverings on the market and something about their wearing qualities and special uses. It is as poor economy and taste to put a delicately colored rug or carpet with soft pile that is easily crushed in a room where there is constant passing and things are likely to be spilled on it as to furnish a living room with a combination of gilt and mission-style furniture. Neutral colors and inconspicuous designs that give floors a flat effect are considered in best taste. Quality is a point that should not be sacrificed to anything else, for floor coverings of good quality, if properly cared for, will usually be found most durable and economical.

COMMON TYPES OF RUGS AND CARPETS.

The majority of modern textile rugs and carpets are woven on power looms perfected by American manufacturers. Ingrain, Brussels, Wilton, Velvet, and Axminster are the most common kinds. In addition to these, there are oriental rugs and various adaptations of the old-fashioned rag rug now manufactured on a large scale in factories, as well as fiber and grass rugs and mattings.

All carpets and rugs, whether they have a pile, as in Brussels, Wilton, or Axminster, or a plain weave like ingrains, are made up of warp and weft threads. The warp threads, or chains, as they are often called, are those that run lengthwise and are set in the loom; the woof, weft, or filling threads run crosswise through the warp.

Worsted, woolen, cotton, linen, hemp, and jute are all used for carpet yarns. In general, the best pile carpets have a worsted surface and a clean, smooth linen or hemp backing. When woven the difference between worsted and woolen for carpets is hard to detect, but worsted wears better and is made of coarse, hairlike wools doubled and twisted after spinning, while woolen is softer and less lustrous and durable.

INGRAIN.

Ingrain carpet is woven like plain cloth from 2-ply or 3-ply yarn dyed before weaving. The warp, often made up of threads of various colors, forms the design and is so handled that the ground color of the design on the face becomes the color of the figure on the reverse, and an ingrain carpet can therefore be used on either side. The mixing and weaving of these threads of different colors is called ingraining, and the more closely it is done, or, in other words, the greater the number of warp and filling threads to the inch, the more durable is the carpet, provided good materials are used.

Many grades of ingrains are on the market, and material, weave, and weight should all be carefully considered before a choice is made, because they affect the wearing quality. The all-wool kinds with worsted warp and woolen or worsted filling are best and at the same time most expensive, while those with cotton warp, or chain, and woolen filling are cheaper but less desirable, because they will not hold their color so well and are likely to shrink. A light-colored wool or wool-filled carpet is likely to contain more pure wool than a dark one, for the dark colored wools can be more easily adulterated with animal hair.

Ingrain carpets and rugs are particularly good for use in bedrooms, for they are easy to clean, moderate in cost, and not heavy. The plain colors now made in the all-wool grades are especially attractive. Where a floor can not be finished and left bare, these plain ingrains are excellent as a background for small rugs or to cover the space around the edges of a large one. Ingrain carpets and rugs wear better and look better if well padded with a layer of good-quality carpet lining or several thicknesses of newspapers tacked to the floor. On account of their light weight, ingrain rugs are hard to clean on the floor unless they are tacked down.

There are also modifications of the ingrain carpet sold under a variety of names. The Kidderminster is woven on an ingrain loom and gets its name from the city in which it was originally manufactured. Venetian is also an ingrain with a colored worsted or cotton warp, which forms the figure, and with a jute filling. Pro-Brussels is still another grade with a jute warp and a wool weft.

Art squares are seamless ingrain rugs, often oblong in shape and with fringe on the ends and are sometimes called druggets, referring probably to their use as a protective covering for more expensive carpets. Scotch wool rugs are also ingrains, but the wool yarn used is very heavy and the finished rug is more firmly bound than an art square.

All these reversible wool rugs give good service in proportion to their cost.

BRUSSELS.

Brussels carpet, so called because it was first extensively manufactured on Flemish looms in and around the city of Brussels, is a loop-pile carpet with two or more warps and one or two fillings. One warp is always colored worsted yarn raised in rows of loops to form the surface pile by being thrown over wire inserted with each filling thread. These loops are held in place by the other warp and the filling, which form the back and may be of linen, hemp, cotton, or jute. The wires are set from 7 to 10 to the inch, and are drawn from the fabric after several inches have been woven. The

closer these wires are, the heavier and more durable the carpet woven.

In genuine Brussels each color of the worsted warp is dyed separately in the yarn, and in weaving is carried on a separate frame. As many as six frames may be used in the best grades. The number of colors is limited therefore to six in any straight line running lengthwise of the carpet, and whenever one of them is not needed in the design on the surface, it is buried in the body of the carpet and may be seen on the wrong side among the backing threads. From this has come the name body Brussels. In judging the quality of a Brussels carpet, the housekeeper should note how close the rows of loops are together on the surface, whether the colored warp shows on the wrong side, and whether the thread used for the backing is clean and smooth. Dirty, lumpy backing thread generally indicates poor quality.

Tapestry Brussels is an imitation of body Brussels and is inferior to it in both appearance and durability. The design is not woven in with several warps each of a different color as in body Brussels, but is either printed on one warp before it is woven or is printed on a plain-colored carpet after weaving. Less worsted yarn is therefore used, the design is not so distinct, more colors are used, and no color appears on the back unless stamped there after weaving. The worsted yarn is generally of poor grade, and jute or some inexpensive fiber is used for the backing. Also, the rows of loops are farther apart than in real Brussels, and often only one thread is used in a loop. Tapestry Brussels generally, however, costs only about half as much as body Brussels.

Brussels carpet is about 27 inches wide as sold to the general trade, but is often sewed into rugs with borders to correspond. The surface is free from lint and rather easy to clean, and for this reason many housekeepers prefer Brussels to the cut-pile carpetings. Special care should be taken in sweeping Brussels to avoid "sprouting" (p. 28).

Brussels rugs and carpets are suitable for any room in the house where such coverings are used, and the good qualities will stand years of hard wear. Just at present, comparatively little Brussels carpet is on the market, for the cut-pile types can be more easily and cheaply manufactured, but there is every indication that its popularity will return.

WILTON.

Wilton carpet is woven in the same way as Brussels, except that the loops are cut by a knife attachment on the wires that raise the pile in weaving, thus giving a plushlike surface. The pile is higher than the loops of a Brussels, the yarn for both surface and back is generally

of better grade, and the Wilton is more firmly woven and contains about 50 per cent more yarn than a Brussels. The more wires there are to the inch in weaving Wilton carpet, the better the quality. Wilton carpet is woven in several widths, varying from ¾ to 1 yard. The large Wilton rugs are woven in strips, which are accurately matched in design and so firmly sewed together that unless closely examined the rug looks as though it were woven in one piece. The designs are in many cases skillfully worked out in soft harmonious colors from oriental rugs and carpets as patterns.

There are two general types of Wilton, worsted and woolen, so called because of the kind of material used in the warp that forms the pile. The worsted Wiltons are more expensive than the woolen, but will withstand harder wear and are generally made in more attractive colorings and designs.

Wiltons are especially suitable for use in living rooms and halls and on stairs, though they will give good service wherever placed.

VELVETS.

Many persons in this country call all machine-made cut-pile carpets and rugs velvets, but this encroaches on a commercial name given to an imitation Wilton, and in buying a so-called velvet rug this distinction should be remembered. Velvet carpet and rugs are made in the same way as tapestry Brussels, except that the loops are cut, but on account of the longer pile they contain more wool. Velvets should be cheaper than Wiltons for the same reasons that tapestry Brussels should be cheaper than body Brussels; that is, they contain less worsted yarn.

The heaviest qualities of velvets are said to wear almost as well as good-quality Wiltons, and may be used to advantage in living rooms, dining rooms, and halls, while the lighter grades are better in bedrooms. The plain soft colors make a good background for other furnishings, but are not practicable for halls and dining rooms and other places where they get particularly hard use, for they show spots and dust much more than figured floor coverings. Some kinds show dust and footprints more than others, and it is well to test this point in the store by walking across a rug before buying it.

AXMINSTER.

Axminster carpets and rugs have a thick, cut pile and somewhat resemble Wiltons, though the method of weaving is quite different and a greater range of colors is possible. They have two warps and two fillings and hence are not so heavy and are less closely woven than Brussels and Wilton. For these reasons, they require less material and less time to manufacture. The pile is made by fastening tufts of woolen yarn into the warp, and in this respect an

Axminster is woven like a handmade oriental rug, except that on the power loom ingenious nippers take the place of the deft fingers of the oriental weaver. This woolen tufting is sometimes adulterated with jute and coarse animal hair, and before buying an Axminster it should be carefully examined at close range on both front and back. These inferior materials generally feel harsh or fibrous to the touch. The more closely the back is woven the better the carpet will wear.

The best Axminsters are very durable and with their wide range of design and coloring and depth of pile give a luxurious effect for fairly moderate cost, making them especially popular for use in hotels, clubs, and other public buildings. The cheaper grades of Axminsters are not considered so durable as Wiltons and Brussels, and will show the effects of hard service rather soon. The housekeeper will find that it pays to compare weights as well as prices before making her purchase.

The chenille rugs and carpetings having a wool backing and a weft of tufted cord, which is woven separately, are a modification of the Axminster. They can be woven any length and as wide as 30 feet without seams and any shape desired. Many of them have two-toned borders and centers, either plain or broken by inconspicuous conventional designs, thus making them suitable to use in many rooms and with many kinds of furnishings. Though expensive, these chenille rugs are said to be exceptionally durable.

ORIENTAL RUGS.

Oriental rugs are those woven in one piece on hand looms in eastern countries, and as a whole are the most beautiful and sought after of all floor coverings. They have a linen, hemp, or wool warp and filling and a pile of tufts of woolen or occasionally silk yarn knotted into the warp by hand and evened with scissors. Weaving rugs in this way is, of course, a laborious process, requiring great dexterity and skill, and only after the rugs have lain on the floor for a long time and been polished by the wear of oriental sandals do they attain their greatest beauty and value. The value of a genuine oriental rug depends on the design, the fastness of color, the compactness and evenness of the weave, the number of knots to the square inch, and the care that has been taken of it. From the housekeeper's point of view the value depends also on whether the rug harmonizes with other furnishings in the house.

Formerly beautiful old rugs could be bought at fairly reasonable prices, but during recent years the demand has increased to such an extent that good genuine ones are out of reach of all except those who can pay high prices. To meet this demand quantities of rugs are being woven in oriental countries, in some cases under factory con-

ditions, in imitation of the antiques. These do not have the quality that comes with age and wear, but if well made they are worth buying and will give good service. Modern Chinese rugs, copying the designs and colors of the old ones, are especially popular at present.

In some cases, however, oriental rugs are bleached and treated with chemicals in order to soften the garish colors resulting from aniline dyes and to give them sheen, and such rugs are likely to wear out quickly. Sometimes this bleaching is so skillfully done that even expert judges of rugs are deceived, but there are a few signs that even an amateur can recognize. If cheap, crude dyes have been used, the darker colors generally run into the lighter, making the design blurred. If the rug has been very much bleached, the colors on the surface of the pile will be soft and dull, while by separating the threads and looking closely the colors at the base will be found to be clear and bright. Rubbing the surface briskly with a damp cloth will bring out the odor of chloride of lime with which the rug has been bleached, and very often the cloth will be stained with the colors. As a general rule, it is safe to buy oriental rugs only from reliable dealers.

RAG CARPETS AND RUGS.

Probably the first carpet made in this country had a linen or canvas foundation with the design worked in cross-stitch or some similar way, but the first woven carpet was probably made on a hand loom and had a warp of cotton string and a filling of narrow strips of cotton or woolen rags sewed together by hand and sometimes dyed at home. For years this weaving was a common household industry, and in fact still is to some extent, but it has also become a factory enterprise, especially for the making of rugs. New cotton rags uniform in color and texture are used in these instead of the miscellaneous sorts seen in the old-fashioned rag carpet, and often ingeniously combined in simple but attractive border designs. These rugs are suitable for summer cottages, bedrooms, and bathrooms, but many of them have the disadvantage of being so light in weight that they are easily wrinkled and moved out of place by the walking over them, and are also of colors that soil quickly. The housekeeper will do well to choose the darker colors and the heavier weights.

Braiding rags and sewing these strips into oval or round rugs is another home industry of colonial days that is now being revived under factory conditions, as is also the making of the old-fashioned hooked rugs, which have a canvas foundation through which colored rags are drawn to form the pile. Also cut rags are sometimes sewed to the canvas foundation and the ends sheared to make a soft, even surface.

Crocheted and knitted rag rugs in various shapes and designs are also made in homes and to some extent commercially. When made firmly these are heavier than most rag rugs and stay in place better.

Rugs woven of strips of firm cloth in a check or similar pattern are still another old form of floor covering that has had commercial revival.

FIBER AND GRASS RUGS AND MATTINGS.

Fiber and grass rugs have been very popular during the last few years, especially for use in summer cottages, on porches, and in other places where pile rugs would not be appropriate. They are cheaper than many other kinds, are fairly durable under moderate use, and are generally not obtrusive in design and color.

Mattings, while perhaps not so popular as formerly, are still in demand as all-over coverings on floors that are not suitable to finish. Mattings are generally light in color and not suited to hard wear.

Most fiber and grass rugs and mattings are more or less open in weave and permit dirt to sift through and accumulate on the under side.

Fiber.—Many of the rugs known commercially as fiber have a cotton warp and a filling of twisted paper and some have both warp and filling of twisted paper. Such rugs are put through a sizing process after weaving, in order to make them firmer and water-resistant. In some cases, wool is used with the paper, and the rug is then known as wool-fiber. The wool adds warmth to the rug and increases the durability, which is an important factor. A design is woven into some of these fiber rugs and stenciled on others.

Another type of fiber rug is made of flax that has been colored and spun into a heavy yarn. Rugs of this type are plain in color and reversible, are made in a variety of attractive shades suitable for all rooms in the house, and are more durable than most fiber or grass rugs and mattings.

Grass.—Certain kinds of wild grasses in the Middle Western and Western States are harvested and twisted into threadlike ropes and woven into rugs and mattings much like those of fiber in wearing qualities. These grasses are neutral in tone, and the rugs depend for their color on the heavy cotton threads used either for warp or filling. Some of these grass rugs have designs stenciled on them, while others are plain. They are used on porches and in summer cottages, and sometimes for general use in living rooms and bedrooms.

Mattings.—All straw mattings are imported from China, Japan, and other oriental countries, and are woven on hand looms. Some of the best qualities have a hemp warp, though cotton is more commonly used, and all of them have a filling of straw made from the native grasses. The designs are very simple, and little attempt is

made at color effects except stripes and checks on a natural-colored background. If the design appears only on one side then it has been stenciled; if it is alike on both sides the straws have been dyed before weaving. Reversible mattings are, of course, more serviceable, and the natural-colored ones are often of better quality than those that have been dyed. The firmer and closer the weave, of course, the better the matting will wear.

Coconut-palm fiber is woven into a tough matting that looks not unlike coarse roller toweling with a yellowish tinge and a red border. It is generally used to protect more expensive floor coverings or in hallways and on stairs or porches where there is a great deal of wear.

UTILIZING OLD CARPETS AND RUGS.

It is often a question of making the best of the materials at hand when providing floor coverings for the home. One way of doing this is to have new rugs woven from old woolen carpets and rugs too shabby to be used as such. The old material is cut into strips about three-fourths inch wide, which when sewed together and twisted make a cord somewhat like chenille and form the filling of the new rug. Cotton string is used for the warp. These rugs are heavy and soft, alike on both sides, and durable, provided they are cleaned carefully. They are generally rather neutral in color and without a definite design; borders, however, may be woven from strips of carpet of solid color, or figured carpet may be dyed for this purpose. In general, about 6½ pounds of old carpet is required to make a square yard of the rewoven fabric, depending of course on the weight of the old material.

Worn Brussels, Wilton, or velvet carpet turned face down is sometimes used to cover an unfinished floor. The old carpet should be thoroughly cleaned before it is tacked down and may be painted and varnished.

CARE OF RUGS, CARPETS, AND MATTINGS.

First of all, rugs, carpets, and matting should be carefully laid. As already stated, they wear best on smooth, level floors, and if defects in the floors themselves can not be remedied, they should at least be covered up so far as possible by padding with material made for the purpose or with carefully arranged layers of newspapers. Under mattings and grass and fiber rugs, newspapers make especially good padding because, despite the best daily care, much dirt sifts through and can be removed by simply folding and destroying the papers when the matting or rugs are taken up for thorough cleaning. If possible, in the case of matting the edges of the padding should not coincide with the seams in the matting, thus allowing the dirt to sift through to the floor underneath. Where a large remov-

able rug is used with ingrain or other carpet tacked down around the edges of the floor, the padding in the middle of the room may be covered with carefully laid, overlapping strips of heavy manila paper held in place by the carpeting. This prevents dirt from getting into the padding and provides a smooth surface easily brushed when the rug is taken up. The tacks used to fasten carpets and rugs should be rust proof.

A carpet should be carefully fitted to the space over which it is to be tacked. If it is so large that it wrinkles and shifts in use, it will be uncomfortable underfoot and may be torn by heavy furniture. If it is stretched too tight, the threads may break from the constant strain. When a carpet or rug is too large for the space for which it is desired, turning one edge under often seems a convenient way out of the difficulty. This should be avoided, if possible, especially if this double fold comes where it will get hard wear, for the ridge thus formed not only looks clumsy but also wears and soils more quickly than the rest.

Matting lies much flatter and wears better if laid with the edges of adjoining widths close together and tacked near the edge with brads or small single tacks. Cut edges of matting should be either bound or turned under at once to prevent fraying.

After carpets and rugs have been properly laid, the next question is how to clean and keep them in good condition so that they will wear longest, but without using any more labor and energy than is necessary. So far as possible dirt should be kept out of the house by placing fiber mats at the entrances, by insisting that muddy shoes be cleaned outside, and by keeping walks and porches clean. Frequent and systematic cleaning will keep floor coverings bright and fresh, will prevent dirt from weakening and discoloring the fibers, and will keep moths from the woolen kinds. Many housekeepers have little idea how much furnishings are injured by being allowed to become too dirty. A few good tools are needed for this work.

CLEANING EQUIPMENT.

The broom with which rugs and carpets are swept should be stiff and moderately heavy, and should be discarded for this purpose as soon as it becomes one-sided. When not in use the broom should be hung up so that the weight does not rest on the straws.

Carpet sweepers are excellent and almost indispensable for the daily cleaning. They pick up surface dust, threads, and lint without scattering dust, and are in fact a combination of mechanical broom and dustpan. Best results are usually obtained by running them with a smooth, steady motion rather than in quick jerks. Two types are now on the market—the older kind fitted with revolving brushes and the newer models called " vacuum sweepers," which have in addi-

tion to the revolving brush a bellows to draw up the dust below the surface. The efficiency of a carpet sweeper depends in part on how clean it is kept. It should be emptied frequently and the hair and threads cleaned from the brush with a wire hairbrush, old scissors, a currycomb, a buttonhook, or an old coarse comb. Old carpet sweepers can often be supplied with new brushes and rubber tires and made as good as new.

For more thorough cleaning, a vacuum cleaner is the best tool to use on rugs and carpets, for it sucks up, without scattering, the fine particles of dirt from the depth of the fabric as well as surface dust. A number of vacuum cleaners for household use are now on the market, and before buying, the housekeeper should, if possible, look them over and consider such points as efficiency in removing dirt, cost and ease of operating, and amount of storage space needed, as well as initial cost.

METHODS OF CLEANING.

Rugs and carpets in rooms in constant use need to be brushed or cleaned with the carpet sweeper every day or two; and once a week thoroughly swept or gone over with a vacuum cleaner, or in the case of small rugs, beaten out of doors.

In sweeping, the broom should be held nearly upright and the strokes should be short, in one direction, and with the nap of the carpet. Oriental rugs, especially, should be swept with the nap, not against it, and care should be taken not to sweep any kind of a pile rug or carpet with a digging motion of the broom. The so-called "sprouting" of Brussels carpet, by which is meant the appearance of broken ends of yarn on the surface, is often caused by wrong methods of sweeping. The broken ends of yarn should be clipped off with scissors as soon as they appear and should in no case be pulled out. The lint that comes from Axminsters is composed of the short clippings that settle into the nap as the carpet is being woven and is not a defect.

Sweeping should be made as dustless as possible by dampening the broom or scattering crumpled, dampened bits of newspaper, moist tea leaves, or one of the commercial sweeping preparations on the surface of the carpet. These methods must be used with care, however, for delicately colored carpetings are especially likely to be streaked by moisture. If a carpet or rug still seems very dusty after cleaning, the surface may be wiped with a cloth wrung as dry as possible from clear water.

One of the great advantages of rugs over carpets is that they can be taken out-of-doors more easily and often to be cleaned, thus removing the dirt from the house with them and lessening noise and confusion within. They should be turned face down on dry snow

or grass, beaten with a flat carpet beater, and swept thoroughly on both sides. In some houses an electric plug is so placed that the vacuum cleaner can be used on the porch and the rugs cleaned there in the open air and sunshine. Beating or brushing rugs or carpets hung over a line or shaking them is likely to strain or break the threads and loosen bindings. Pile rugs and carpets, whether made by hand or machine, should be rolled rather than folded while they are being carried from place to place.

Rag and light-weight cotton rugs may be washed in the tub like any other heavy colored material, but must be rinsed thoroughly in order to prevent them from looking grimy. Turning the hose on a rug or dashing pails of water over it is sometimes the easiest and most effective way of rinsing.

Other textile rugs and carpets when badly soiled may be placed on a table or other flat surface of convenient height and scrubbed with a heavy lather of mild soap and water, using either a brush or a sponge. As soon as a section is scrubbed clean, it should be rinsed thoroughly with water changed as often as it becomes discolored. This is a thorough method of cleaning, but may cause the rugs to shrink or change color, and therefore should be used with caution. It should not be tried for very thick-piled rugs unless one is sure the rug can be thoroughly and quickly dried; moisture left at the bottom of the pile may rot the threads. If possible, it is better to send valuable rugs to a good professional cleaner who has special apparatus for this work.

Fiber and grass rugs and mattings should be swept with a soft brush and may occasionally be wiped with a slightly damp cloth, or they may be cleaned with a vacuum machine. Water is likely to discolor floor coverings of this kind and must be used very sparingly if at all. When taken out of doors for more thorough cleaning they should be laid flat and swept on both sides but not beaten nor shaken. Grease and other stains may be removed in much the same way as from carpets. (See p. 30.)

RESIZING.

After cleaning, a machine-made pile rug sometimes loses its shape or wrinkles and curls up because the sizing on the back has worn off. Resizing will pay for itself in adding to the durability of the rug as well as making it look much better and can be done at home or by a carpet dealer. The rug should be stretched tight and true and tacked at frequent intervals face down on a floor or some other flat surface where it can remain undisturbed. It should then be sprinkled generously with a solution made by soaking and dissolving ¼ pound of flake glue in ½ gallon of water in a double boiler or a container surrounded by hot water. The rug should be allowed to dry for at least 24 hours.

If it is light weight, care should be taken not to put on so much glue that it penetrates to the right side.

REMOVING SPOTS AND STAINS.

Spots and stains can be removed from rugs and carpets as from other textiles of similar material and color except that the process is more tedious because the fabric is heavy and sometimes clumsy to handle. All stains are of course easier to remove while fresh. Grease stains into which dust has settled are perhaps the commonest. Sometimes part of the grease and dirt can be scraped off with a dull knife and the rest scrubbed off with a soft brush and warm soapsuds, or absorbed by one or more applications of fuller's earth, French chalk, or talcum powder, or by blotting paper and a warm iron. Or a solvent such as carbon tetrachloride, gasoline, or benzol may be used; the latter two are very inflammable and must not be used in the same room with an open fire or flame of any kind.

A freshly spilled liquid should not be rubbed from a carpet or rug, because this tends to drive it into the fabric. If possible, it should be covered at once with corn meal, talcum powder, blotting paper torn into bits, or any other absorbent material which will take it up and prevent its spreading.

Detailed directions for removing all kinds of stains are given in another bulletin of this series.[4]

MENDING.

Mending holes, reinforcing worn places, or rebinding rugs or carpets will often add greatly to their appearance and serviceability. Different stitches, of course, are needed on the different weaves, but the housekeeper can learn them all with a little practice. The carpet to be mended should be carefully examined to see whether the warp or the filling threads, or both, need renewing or strengthening, and materials for mending should then be chosen that match the old ones in color and texture as nearly as possible. If colors can not be matched, neutral shades corresponding in tone may be used, or it might even pay to dye yarns.

Ingrains may be darned with the ordinary over-and-under stitch used on stockings and the pattern worked in afterwards, but Brussels, Axminsters, Wiltons, or any of the pile carpetings require a little more complicated method. The linen, jute, or cotton back should first be darned in and then the pile made with loops of colored worsted yarn left uncut in Brussels and clipped in those with velvety surface (fig. 1). Curved scissors are especially convenient for this work.

[4] Farmers' Bul. 861, Removal of Stains from Clothing and Other Textiles.

The pile stitch has to be adapted to the kind of carpet, but in each case should be securely anchored to the backing. Designs can be replaced so skillfully that mended places can hardly be detected. Oriental workers are particularly clever in mending handmade rugs and are employed in the workshops of all the large rug and carpet dealers, but equally satisfactory work can be done at home if plenty of time can be given to it.

Seams in carpets should be made on the wrong side by overhanding the two edges firmly together with strong linen thread. The seam is likely to be more even if sewn over a thick pole, as is done in commercial establishments. Special carpet needles are on the market and will be found much more convenient for this work than ordinary ones.

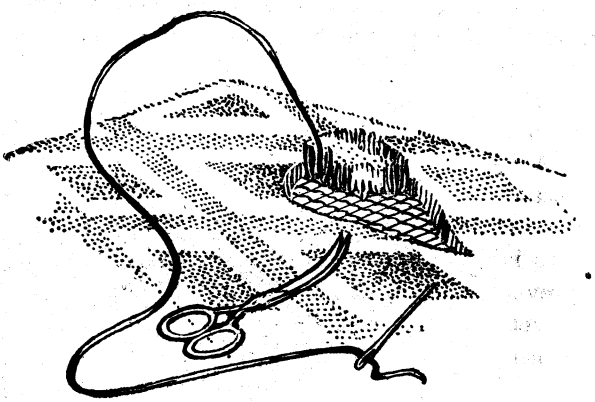

FIG. 1.—Mending a rug with the pile stitch.

Reinforcing small rugs with braid, binding rugs and carpets, and sewing on fringes can generally be done more satisfactorily by the sewing machine than by hand. A selvage similar to that on oriental rugs can be made by laying two or three rather heavy cords along the edge and darning them to the rug or carpet with over-and-under stitches set so close together that the cords are entirely covered and a flat narrow strip is formed (fig. 2). Black or neutral-colored wool and a strong needle with a large eye should be used. If the edge is very worn and ragged, it may first be reinforced by overcasting or whipping braid to the underside.

STORING.

Carpets or rugs to be stored should first be thoroughly cleaned. They should then be spread out, covered with clean newspapers that have been sprinkled with turpentine, gasoline, or benzine as a protection against moths, and before the liquid evaporates rolled tightly, on poles if possible, tied securely, wrapped in heavy paper, and the overlapping edges of the paper sealed with liquid glue. The rugs should then be stored in a clean, dry, cool place. If the cellar is the only storage place available the packages should be suspended from the joists, not allowed to lie on or near the floor where they will absorb dampness.

Fumigation by carbon disulphid, an excellent method of freeing carpets and rugs of moths or other insect pests, is described in another bulletin of this department.[5]

LINOLEUM.

Linoleum is one of the best and most serviceable of all coverings for floors in kitchens, pantries, and bathrooms, and is being more and more widely used in combination with textile rugs in all the rooms of the house. It wears well, is easily cleaned, is impervious to grease and water spots, and has a smooth resilient surface comfortable to walk and stand on.

Linoleum is made by mixing together ground cork, oxidized linseed oil, and various gums into a plastic mass, and pressing, or

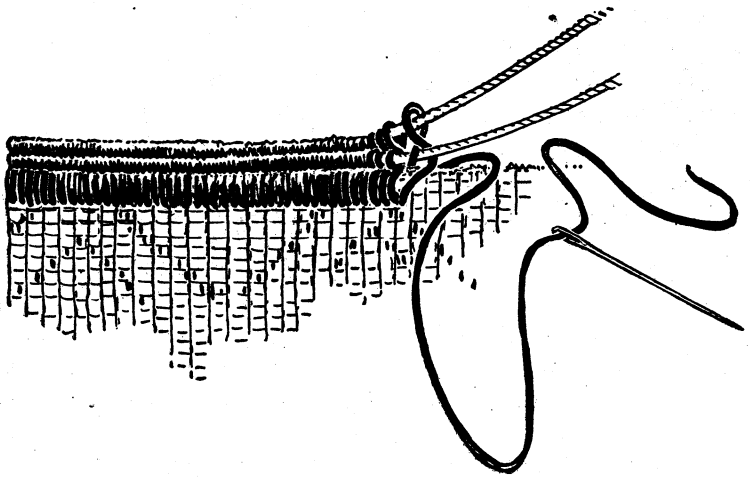

FIG. 2.—Wrong side of rug, showing method of weaving new edge.

"keying," as the manufacturers say, this onto a backing of jute burlap. "Green" linoleum is the term used for it at this stage, and in order to season it it is sent to drying rooms for from 1 to 6 weeks, depending on the thickness.

There are three general types of linoleum on the market: Plain, inlaid, and printed. The plain, as the name implies, has no design and the coloring matter is added to the plastic mass, or "mix," as it is technically called, before it is applied to the burlap backing. This kind of linoleum gives the floor an unobtrusive flat appearance that is restful and pleasing, and the good grades are extremely durable. It is made in a variety of colors—browns, grays, greens, and even dull blue and old rose—as well as combinations of two tones of one color, which break the severely plain effect and make footprints

[5] Farmers' Bul. 799, Carbon Disulphid as an Insecticide.

and such marks less conspicuous. Neutral shades of plain linoleum are a good basis for more brightly colored rugs. Having no pattern to match, it is easier and more economical to lay than the figured kinds.

Inlaid linoleum is so made that the color in each part of the design extends to the backing, as can be seen by examining the edge. The pattern, therefore, will last as long as the linoleum itself. In straight-line inlaid the design is more sharply defined than in the other kind known as granulated, in which the edges of the various parts of the design blend slightly into each other. There is little, if any, difference in the wearing quality of these two kinds when the relative cost is considered.

Printed linoleum is made by stamping a design of oil paints on a thin grade of plain. A greater variety of colorings and designs to suit the individual taste is thus obtainable at less expense than in the case of the inlaid kinds, but because the design is only painted on the surface and does not go through to the base, printed linoleums can not be expected to give such lasting service. They are, however, relatively inexpensive and are satisfactory in places where the wear is not excesssive.

In general, the quality or grade of all linoleum depends on the proper seasoning and the thickness. The housekeeper must depend on the manufacturer and the dealer to judge the first point, but she herself before making a selection should look at the edges of the various pieces on sale and choose one of proper thickness for her purpose. Naturally, the thicker the material the more wear it will give, and where traffic is heavy the thicker will be found more economical in the long run. Smoothness of finish, which can be judged by the touch with a fair degree of accuracy, is another characteristic worth considering because it affects cleaning. The dirt does not grind into the smoother finished linoleums, and they are easier to clean than those with a rougher surface.

Plain linoleum is usually made in strips 6 feet wide, and inlaid and printed in strips 2, 2½, 3, and 4 yards wide, though the 2 and 4 yard widths are most common. The price of linoleum is generally given by the square yard, and the amount needed for a given space should be reckoned in square yards.

HOW TO LAY AND CARE FOR LINOLEUM.

Unlike most other floor coverings, linoleum when once laid usually remains undisturbed until it is worn out; therefore particular care should be taken in laying it. The floor under it should be level, smooth, tight, and dry. On rough floors linoleum will wear unevenly, and moisture will cause the burlap backing to deteriorate

and may attract water bugs and other household pests. Cement and composition floors may need special treatment before linoleum is laid, and reliable dealers should be consulted on this point.

In cold weather linoleum should be placed in a warm room for at least 48 hours before it is unrolled. If this precaution is not taken, the linoleum is likely to crack, because cold makes it brittle.

To lay linoleum properly requires some skill, and if the work is not properly done it may buckle and crack. Dealers can often give reliable directions, or, if possible, it is well to employ a trained worker who charges by the square yard and brings with him the needed tools and materials.

There are two ways of fastening linoleum to wood floors—tacking and cementing. The first is the simpler method, but by the second the seams and edges are made water-tight and the linoleum is said to give longer service. First of all, the quarter-round molding along the foot of the baseboard should be removed and the linoleum cut in strips running crosswise of the floor boards if possible. If it is to be tacked, the strips should be fitted snugly together along the seams but should not be fastened for 3 or 4 weeks, for linoleum usually expands when laid on a floor and if tacked down at once will buckle. To give plenty of room for this expansion, it is a good plan to trim back the edges next the baseboard for ¼ or ½ inch, or just enough so that the molding will cover the edge. The molding should then be nailed directly to the baseboard, leaving the linoleum free to expand and to be trimmed more next to the baseboard if necessary. The linoleum may be so perfectly held in place that it will not need to be tacked, but if it does, brads should be set ⅛ to ¼ inch from the edge about 3 to 4 inches apart and driven well below the surface.

Linoleum may be cemented at the seams and edges directly to a wood floor or permanently cemented down firmly over a layer of deadening felt paper that has itself been pasted to the floor. Some manufacturers and dealers furnish printed directions for this method. The cement used should be waterproof and contain no silicate of soda (water glass) because this is injurious to the linoleum when moisture comes in contact with it.

Waxing or varnishing is said to improve the appearance of linoleum and to make it last longer. Wax should be used on the inlaid and plain kinds, and varnish on the printed ones, for wax sometimes tends to soften the printed surface. If either of these finishes is applied, the linoleum is then cleaned and cared for like a wood floor so finished. If not given a special finish linoleum should be swept with a soft brush and dusted with an oiled or dry mop. Occasionally it should be cleaned more thoroughly with a cloth wrung

out of suds made with lukewarm water and neutral soap, rinsed with clear water, and wiped dry with another cloth. Only a small space should be wet at a time, and a linoleum-covered floor should never be flooded. Strong soaps and cleaning powders that contain alkali injure linoleum and should never be used on it. Whenever any kind of cleaning powder is used on a particularly dirty spot, care should be taken to remove any trace of the water in which the powder was dissolved.

Castors on heavy furniture are likely to cut into linoleum and should be replaced by glass or metal shoes having a wide bearing surface and no rough edges. In moving heavy pieces across linoleum the added precaution should be taken to place an old rug or carpet under them.

FLOOR OILCLOTH.

Printed linoleum has largely replaced floor oilcloth, though the latter is still used where investment in the more expensive material would not be justified. It also has a foundation of canvas, burlap, or similar material to which successive coats of waterproof paint are applied. The design is stamped on after the last coat of paint has dried and been rubbed smooth. Floor oilcloth should not be confused with enameled oilcloth used for covering tables and shelves; the latter is made of other materials and by an entirely different process.

Oilcloth is generally tacked to the floor and should be cleaned and cared for like printed linoleum.

SUMMARY.

Finished floors partly covered with rugs have made cleaning easier in many households. Also they are much more sanitary than carpeted floors, for the rugs can in most cases be taken out of doors frequently and cleaned, aired, and sunned. Much dust is thus taken out of the house instead of being scattered to settle again on furnishings and woodwork.

For the kitchen the ideal floor is easy to clean, attractive, durable, noiseless, odorless, comfortable to walk and stand on, not spoiled by water, and nonslippery when either wet or dry. Though all these points are difficult to combine in one material or finish, the housekeeper should keep them in mind in making a choice.

Varnish, shellac, wax, oil, and paint are used in finishing floors and vary not only in appearance but in the way they wear and the amount of labor needed to apply and keep them in order. It pays to study these points before choosing the finish for a floor.

In general, wax and varnish are more suitable to use in living room, dining room, and bedroom, while oil and paint, being less

likely to be damaged by water, are better for kitchen, pantries, and other places where water is likely to be spilled.

No matter what finish is chosen, the best materials are none too good to use and should be applied with suitable tools. A professional wood finisher would not attempt to paint or varnish a floor without the proper brushes, and the housekeeper should not expect to get good results with poor equipment and materials.

A neutral color darker in tone than the walls makes the floor look like what it really is, the foundation and often part of the background of a room.

Proper care of a finished floor is economy. Many times finishes applied at considerable outlay have been spoiled by neglect or because wrong cleaning materials were used on them.

Rugs and other floor coverings that are plain in color or inconspicuous in design are best for general use. Kinds that do not show footprints and are not soiled easily will generally give the most satisfactory service.

Ingrain, Brussels, Wilton, and Axminster are the standard machine-woven woolen carpetings for household use, and the good grades of the last three are especially durable.

Good oriental rugs are always admired, but are now so high in price that they are beyond the reach of the average buyer. It is safe to buy them only under the advice of an expert or from a reliable dealer.

All rugs and carpets should be cleaned frequently and thoroughly. Dirt that is allowed to remain wears the fibers and becomes increasingly hard to remove.

Linoleum is widely used, especially on kitchen and pantry floors, and seems to give general satisfaction. In order to get the best service from it, it must be laid over a smooth floor in such a way that it does not buckle and should be cleaned with a damp cloth wrung out of suds made with mild soap. Alkalis, strong soap, or the use of too much water will ruin linoleum.

Every household should have a set of durable, carefully chosen tools for cleaning the floors and floor coverings. It saves the housekeeper's time and makes the house more orderly if these tools are neatly arranged in a convenient closet.

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